

**MARKED UP VERSION OF ABSTRACT WITH MARKING**

**TO SHOW CHANGES MADE**

**ABSTRACT OF THE DISCLOSURE**

A low friction fabric constructed of a first layer of woven polyester fibers with an upper and lower woven surface attached to and adjacent a second layer of the same weave of polyester fibers, the second layer having an upper and lower surface. Each of the woven layers comprising a straight yarn in the warp of the weave pattern with the weaves of the layers being oriented at a 90 degree angle to one another.

**MARKED UP VERSION OF SPECIFICATION WITH MARKING**  
**TO SHOW CHANGES MADE**

Page 2

Separation of layers of skin that led to this destructive process is a result of mechanical forces. In particular, the skin structure can be traumatized by vertical forces, perpendicular to the skin, or by shear forces, in the same plane as the skin, with shear forces being the primary culprit. It is these excessive shear forces that are the primary mechanical cause of various skin pathologies and a contributing factor to the failure of medical treatment modalities such as skin grafts. For many people excessive shear force is the primary cause of blistering during day-to-day activities and during high impact activities that occur in many sports. An interface that is capable of reducing or eliminating shear forces would greatly reduce the potential for formation of blisters, and reduce the risk of subsequent ulcers and infection. This is particularly a problem in many medical conditions where the patient has reduced sensitivity as a result of disease or medical procedure. These patients may be unaware of the formation of such skin lesions or ulcers until they are quite advanced. In fact, the leading cause of non-traumatic amputation of a leg or foot is infection following ulcer formation in diabetic patients with neuropathy. In the US alone, nearly 60,000 ~~amputation~~ amputations are performed annually due to non-healing ulcers, with an annual cost in excess of \$2 billion.

Page 3

Likewise, with athletic equipment, such as socks, the problem of blistering after extended periods of activity is well known.[[.]] When an athlete endures high physical stress, the magnitude and frequency of the skin rubbing against the inner surface of a sock or other high-impact area, is increased when compared to normal daily activity. Thus, the blistering caused by such shearing forces is a common

ailment of many athletes. The ability of a sock to prevent this blistering has been heretofore limited to different materials and weaves, principally for the purpose of providing cushioning. Providing a sock with reduced shear forces is unknown. The same is true of gloves, points of contact with various padding, and other athletic equipment.

#### Page 4

Although this is an important breakthrough for all athletic individuals, or those that do a great deal of walking and running, the population which is most likely to benefit from this breakthrough are those with neuropathy. Peripheral sensory neuropathy reduces a person's ability to feel their feet. Consequently, they are not aware when a blister forms, or progresses to the point of ulceration, until blood is observed in a sock or on the floor. These individuals do not have the ability to detect when their skin has been injured. As a result, they continue to carry on with their normal activities until the breakdown of skin is so severe that they are at risk for deep infections.

#### Page 6

The present invention provides these advantages by placing two fabric layers at an ~~[[angel]]~~ angle to each other to create a reduced friction cloth. A woven fabric is composed of two yarns, interlocking from two directions. As you look at a piece of cloth, the fibers that are running the length of the cloth are ~~[[know]]~~ known as the warp yarns and the fibers running perpendicular to these are ~~[[know]]~~ known as the weft yarns. The long sides of the fabric are the selvage ends. These finished ends are made by the weft yarns turning around to weave back through the warp.

Two layers of such a weave fabric are combined to produce the reduced friction cloth. By adjusting the ~~[[angel]]~~ angle at which the layers are related, an increase or decrease of the friction between the layers can be achieved. Tests indicate that a maximum friction is achieved when the weaves are oriented in parallel, and a minimum ~~fiction~~ friction is achieved when the weaves are orthogonal.

**MARKED UP VERSION OF CLAIMS WITH MARKING**

**TO SHOW CHANGES MADE**

1. (Currently Amended) A low friction fabric ~~consisting of~~ comprising a first layer of woven material with an upper and lower ~~identical~~ woven surface attached comprising at least two different types of yarn to a second layer of woven material of the same weave, said second layer having with an upper and lower ~~identical~~ woven surface comprising at least two different types of yarn, said fabric layers being in contact with ~~where the entire~~ said lower surface of said first layer having a weave of a first orientation contacting ~~is in contact with~~ the entire said upper surface of said second layer, said second layer having a weave with a second orientation octagonal to the orientation of the weave of said first layer to reduce the coefficient of friction between the layers and a means of securing said combined layers to third object.

2. (Canceled)

3. (Canceled)

4. (Currently Amended) The low friction fabric of claim 2 ~~where said means~~ 1 wherein said fabric is constructed as a sock.

5. (Currently Amended) A low friction fabric ~~consisting of~~ using two different types of yarn to achieve a smooth side and a rough side comprising a first layer of woven polyester fibers with an upper and lower ~~identical~~ woven surface attached to and adjacent a second layer of the same weave

~~of woven polyester fibers[[,]] with said second layer having an upper and lower identical surface, where the entire each of said woven layers comprising a weave with a straight yarn in the warp of the weave pattern and a low twist yarn in the weft of the weave pattern, said lower surface of said first layer [[is]] being in contact with the [[entire]] said upper surface of said second layer and where with the ~~weaves~~ weft yarn of said layers ~~are place oriented~~ at a 90 degree angle to one another., and a means of securing said combined layers to a particular portion of the human body~~

6. (Canceled)

7. (Currently Amended) The low friction ~~material~~ fabric of claim 5 ~~where wherein the said means said~~ fabric is constructed as a sock.

8. (New) The low friction fabric of claim 1 wherein said fabric is a bandage.

9. (New) The low friction fabric of claim 5 wherein said fabric is a bandage.

10. (New) The low friction fabric of claim 1 wherein said fabric is constructed as a shoe insert.

11. (New) The low friction fabric of claim 5 wherein said fabric is constructed as a shoe insert.

12. (New) A low friction fabric as claimed in claim 5 wherein said woven fabric is an over four under one weave.

13. (New) A low friction fabric as claimed in claim 1 wherein said woven fabric is an over four under one weave.

14. (New) A low friction fabric comprising a first layer of woven polyester fibers having an over four under one weave with an upper and lower surface attached to a second layer of woven polyester fibers having an over four under one weave with an upper and lower surface, each of said layers comprising a straight yarn in the warp of the weave pattern and a low twist yarn in the weft of the weave pattern, said lower surface of said first layer being in contact with said upper surface of said second layer with the weft yarn of said layers being oriented at a 90 degree angle to each another.

15. (New) The low friction fabric of claim 14 wherein the fabric is constructed as a sock.

16. (New) The low friction fabric of claim 14 wherein said fabric is as a bandage.

17. (New) A low friction fabric comprising a first layer of woven material with an upper and lower woven surface attached to a second layer of woven material of the same weave, said second layer having an upper and lower woven surface, said fabric layers being in contact with said lower surface of said first layer having a weave of a first orientation contacting the entire said upper surface of said second layer, said second layer having a weave with a second orientation octagonal to the weave of said first layer to reduce the coefficient of friction between the layers, said fabric is constructed as a shoe insert.

## **REMARKS**

Applicant traverses the rejections of claims 1-4 under 35 U.S.C. 102(b) as being anticipated by Pruitt Patent Number 5,615,418, claim 5 under 35 U.S.C. 112 second paragraph as being indefinite, as well as claims 5-7 which are rejected under 35 USC 103(a) as being obvious and unpatentable over Pruitt '418.

The cited Pruitt '418 reference is directed toward a low friction sock having an outer layer which surrounds an inner layer and a friction isolation layer, the friction isolation layer being sandwiched between the two. The outer layer comes into direct contact with the shoe and the inner layer comes into direct contact with the foot of the wearer. The friction isolation layer is preferably constructed of slick vinyl, satin cloth, Mylar, plastic sheets, slick nylon or any other material that will prevent translation of movement of the outer layer to the inner layer. Pruitt '418 thus requires two woven layers of one material with an intermediate layer of different material to obtain the low friction. In an alternative embodiment the friction isolation layer can be fixed to the outer surface of the inner layer or the inner surface of the outer layer.

The cited reference does not anticipate or obviate the present invention. There is no teaching of orientating the angle of the weave to reduce the coefficient of friction which is the novelty of the present invention.

Applicant submits with this amendment, Lab Test No. 1 and No. 2 showing the reduction of friction of the present invention (referred to as Glider prototype) and a high quality cotton sock as well as a slip friction fiber test. The present invention exhibits about twice the magnitude of motion indicating that the shear between layers is greatly reduced from fabric presently on the market.

The objection to claim 5 has been met and the 35 U.S.C. 112 rejection has been satisfied.



A new specification in a correct format is attached with the drawings removed from the specification and placed in the drawings section. Since the pages and line numbers have been changed, the amendment to the specification refers to the new specification submitted herewith. A purposed new Brief Description of the Drawings section is also submitted for the Examiner's review and acceptance.

Proposed new drawings are also attached to the Amendment for consideration by the Examiner. While the Examiner has not required an Abstract of the Disclosure, Applicant has added one to the specification since the same was omitted from the original specification.

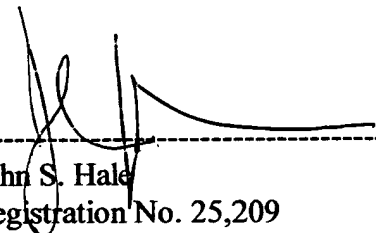
A three month extension of time, together with fee is attached to this Amendment along with a Power of Attorney.

If any additional charges are required, please charge Deposit Account Number 07-1340.

It is respectfully requested that the amendments present place the application in condition for favorable reexamination.

Respectfully submitted,

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## **BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is an exploded schematic showing the top of the material with shear force applied thereto with the bottom surface fixed;

Figure 2 is a cross sectional view the fabric of the present invention with the layers placed in orthogonal relationship;

Figure 3 is an enlarged planar schematic view of the fabric of the present invention showing an over four under one pattern weave;

Figure 4 is a schematic representation of the shear forces applied in an X side by side and Y front to back relationship with respect to the force collection plate on which testing was undertaken;

Figure 5 is an exploded representation of the two layers of fabric with the weave oriented and attached to form the low friction fabric;

Figure 6 is both an exploded and top plan view of a shoe insert or insole and an exploded bottom plan view of a sock;  
and

Figure 7 is a bottom plan view of a bandage using the low friction fabric of the present invention.